



SPECIFICATION

TITLE

METHOD FOR USING INTERNET ACCESS NETWORKS WITH MOBILE, INTERNET-COMPATIBLE COMMUNICATION TERMINAL DEVICES

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

[0001] The invention relates to a method for using various Internet access networks with mobile, Internet-compatible communication terminal devices, for carrying out cashless payments.

DESCRIPTION OF THE RELATED ART

[0002] The Internet communication network represents a global overlay communication network in which Internet access networks or Internet servers are connected via public and private communication networks. Access to the Internet ensues mainly via subscriber line areas or feeder networks of public or private communication fixed networks (e.g., the telephone network of the ISDN communication network). Alternatively, access is provided via communication radio networks (e.g., the public mobile radiotelephone network or a wireless network working according to the DECT or CDMA transmission method). Since the Internet access networks or Internet servers are regionally or super-regionally operated, the respective Internet user or the user's Internet communication terminal device must be logged on at the respective Internet server or Internet operator. This registration is required for a charge registration for Internet services. This means that the respective Internet access networks can only be used by the logged-on or registered Internet users or their communication terminal devices in the respective region or can only be reached via expensive, narrowband connections via the worldwide telephone network.

[0003] A mobile Internet protocol is being currently designed for Internet users in which mobile Internet communication terminal devices are allowed to have worldwide access to the Internet by different Internet access networks or different Internet operators. This service of the mobile Internet permits a mobile, global utilization of the Internet.

[0004] European patent document EP 0 765 068 A2 discloses a method for payment of an Internet use in which the respective Internet can be used given a use of many and different Internet service providers after a request by the Internet and a transmission of the credit card number.

[0005] International patent document WO 97/41586 discloses a method for the connection of a user to the Internet in which the user cannot directly access the Internet but rather access it via a further Internet service provider. To this end, specific logon and check procedures are provided at the further Internet service provider that represent the basis for the usage time and the charge registration.

[0006] International patent document WO 97/14118 discloses a computer network in which geographically distributed computers access the Internet via a central server. The computers can communicate with the server via different communication networks that permits a communication after an authorization procedure and a payment for the use of the server.

SUMMARY OF THE INVENTION

[0007] The object underlying the invention is comprised in fashioning the Internet access networks such that these can be used by arbitrary, mobile communication terminal devices.

[0008] This object is achieved by a method for using various Internet access networks with mobile Internet-compatible communication terminal devices, comprising the steps of providing, in the Internet access networks, at least one respective interface for a cash-free payment for a use of one of the respective Internet access networks which is a respective Internet access network; setting up a traffic relationship to the at least one respective interface in a framework of a logon of a mobile communication terminal device in the respective Internet access network; and using the respective Internet access network one of the mobile communication terminal devices which is a communication terminal device after the cash-free payment via the at least one respective interface that is effected by the communication terminal device.

[0009] The critical aspect of the inventive method is that it provides, in the Internet access networks, at least one interface for cash-free payment for a use of the respective Internet access network. A traffic relationship to the interface is set

up within the framework of the log-on of a mobile communication terminal device in the respective Internet access network, and, following a cash-free payment via the interface effected by the communication terminal device, the respective Internet access network can be used by the mobile communication terminal device.

[0010] The critical advantage of the inventive method is that an Internet communication terminal device can both be registered as well as implement a cash-free payment for the Internet access with the assistance of the interface. The registration at an Internet access network with the assistance of a mobile Internet protocol additionally permits an Internet user to be reached worldwide. A further advantage is the local realization of the interface in the Internet access network, since the information exchange with respect to the cash-free payment is limited to the Internet access network, i.e., it does not ensue via the Internet itself, and, thus avoids a global communication of confidential information or data transmitted given cash-free payment.

[0011] The cash-free payment ensues especially advantageously with the assistance of a credit card; credit card information and personal identification information are communicated to the interface via the communication terminal device and via the Internet access network. Alternatively, other cards or an input of the credit card information at an input device are also possible, which permits a cash-free payment with the interface of the respective Internet access network. A reader is adapted to the cards employed. Alternatively, a uniform input device (e.g., a numerical or alphanumerical keyboard) can be provided for the input of the personal identification and the credit card information.

[0012] According to a further development of the inventive method, an electronic signature is communicated from the affected communication terminal device to the interface in the framework of a security system and/or the identification and credit card information to be communicated is encrypted individually associated to the communication terminal devices.

[0013] Further advantageous developments of the inventive method can be derived from the details presented below.

DESCRIPTION OF THE DRAWING

[0014] The inventive method is explained in greater detail below with reference to a drawing, which is a block diagram illustrating the components and relationships involved in the inventive method.

DETAILED DESCRIPTION OF THE INVENTION

[0015] The drawing shows a block circuit diagram of an arrangement of communication networks for which the inventive method is provided. The global Internet IN is connected to Internet servers IN-S that control the access to the Internet IN. For example, two Internet servers IN-S are shown: one Internet server IN-S/F is connected to a communication fixed network KFN; and a further Internet server IN-S/M is connected to a communication radio network KMN. The communication fixed network KFN is realized, for example, by a service-integrating communication network ISDN or by a telephone communication network FE. Communication fixed network-individual communication terminal devices KE (KFN) are connected to this communication fixed network KFN via subscriber lines ASL.

[0016] The communication radio network KMN can, for example, be realized by an existing mobile radio telephone network GSM or by future mobile radio telephone networks UMTS according to a future UMTS standard for mobile radio telephone networks. Further communication radio networks KMN are fashioned, for example, according to a DECT or CDMA standard or a TD-CDMA standard RLL. Mobile radio telephone network-individual communication terminal devices KE (KMN) are wirelessly connected to the communication network KMN.

[0017] The exemplary embodiment assumes that the communication terminal devices KE (KFN), KE (KMN) connected to the communication fixed network KFN and to the communication radio network KMN are Internet-compatible, i.e., they are equipped with the circuit-oriented and program-oriented mechanisms for a communication with the Internet IN. This means that the communication terminal devices KE represent a processor-controlled device - particularly a personal computer - that exhibits a picture screen display and a keyboard.

[0018] It is also assumed that the communication terminal devices KE (KFN), KE (KMN) represent communication terminal devices KE that can be utilized at different geographical locations. This means that the communication terminal

device KE (KFN) - particularly a portable personal computer with an ISDN interface - can be connected to a communication fixed network KFN at different communication terminals KA. The inventive method can also be employed given a fixed connection of a communication terminal device KE (KFN) to a communication network KFN.

[0019] The Internet IN must be correspondingly fashioned as a pre-requisite for the mobility of the communication terminal devices KE, i.e., a mobile Internet protocol MIP is implemented in the Internet IN that assists the realization of a service for the connection of mobile communication terminal devices KE.

[0020] The inventive communication terminal devices KE (KFN) KE (KMN), furthermore, are respectively equipped with an input EE - shown by way of example in the communication terminal device KE for communication radio networks (KMN) - or a reader LE into which a credit card KK can be inserted - indicated by a dot-dash arrow. With the assistance of the input EE, the credit card information ki stored in a credit card KK as well as the identification information id, i.e., the personal identification pin, can be input by an Internet user.

[0021] The communication fixed network KFN and the communication radio network KMN respectively form feeder networks AN for the Internet access network IN-AN or the Internet IN.

[0022] After a wireless or wire-bound connection of a mobile communication terminal device KE (KFN, KMN), a log-on procedure is implemented in the respective communication network KFN, KMN. Such a log-on procedure can, for example, be implemented with the corresponding communication terminal device identification (not shown) which uses different identifications for the communication fixed network KFN and the communication radio network KMN. Subsequently, a connection from the respective communication terminal device KE (KFN, KMN) is setup to the allocated Internet server IN-S/F, IN-S/M. The setup of the connection and the log-on procedure are implemented in the communication terminal devices with the assistance of a signaling routine SR.

[0023] After the connection setup, the respective communication terminal device KE (KFN, KMN) in the respective Internet server IN-S is connected to an interface SBB for cash-free payment. The interface SBB is realized in software by

an interface routine BB. As a result of a communication relationship between the reader SE or input EE or the signaling routine SR of the requesting communication terminal devices KE and the commercial interface SBB, identification information id (pin) and credit card information ki are communicated to the interface SBB. After a check of these communicated identification and credit card information id (pin), ki, the access to the Internet IN is enabled in the respective Internet server IN-S, i.e., the requesting communication terminal device KE can set up traffic relationships via the Internet to Internet-specific devices (not shown) or to other communication terminal devices KE.

[0024] The cash-free payment for an access to the Internet via the interface SBB can be provided both for a temporary use as well as for a longer or continuous use of the access to the Internet IN or the respective Internet server IN-S.

[0025] The wire-bound communication terminal devices can be alternatively connected via transmission devices in which transmission methods are used that do not influence the existing line technologies for, e.g., the integrated services communication network ISDN or the analog telephone network FE. Such transmission technologies are the standardized ADSL and x DSL transmission methods. No connections to the respective Internet server need to be setup, since these communication terminal devices are directly connected to the respective Internet server IN-S via the respective connection technology. A log-on or registration in the respective Internet server IN-S continues to be required.

[0026] The inventive method is not limited to the exemplary embodiment since the inventive method can also be realized given the greatest variety of public or private feeder networks AN to the respective Internet servers IN-S or Internet access networks IN-AN. The invention also considers a respective adaptation in view of the signaling and the protocols used. The above-described method is illustrative of the principles of the present invention. Numerous modifications and adaptations will be readily apparent to those skilled in this art without departing from the spirit and scope of the present invention.

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[0001] The invention relates to a method for using various Internet access networks with mobile, Internet-compatible communication terminal devices, for carrying out cashless payments.

DESCRIPTION OF THE RELATED ART

[0002] The Internet communication network represents a global overlay communication network [wherein the] in which Internet access networks or, respectively, the Internet servers are connected via public and private communication networks. Access to the Internet ensues mainly via [the] subscriber line areas or[, respectively,] feeder networks of public or private communication fixed networks [—for example](e.g., the telephone network of the ISDN communication network). Alternatively, access is provided via communication radio networks [—for example](e.g., the public mobile radiotelephone network or a wireless network working according to the DECT or CDMA transmission method). Since the Internet access networks or[, respectively,] Internet servers are regionally or super-regionally operated, the respective Internet user or[, respectively,] the user's Internet communication terminal device must be logged on at the respective Internet server or[, respectively,] Internet operator. This registration is required for a charge registration for Internet services. This means that the respective Internet access

networks can only be used by the logged-on or, respectively, registered Internet users or, respectively, their communication terminal devices in the respective region or can only be reached via expensive, narrowband connections via the worldwide telephone network.

[Further, a] [0003] A mobile Internet protocol is being currently designed for Internet users ~~[wherein]~~ in which mobile Internet communication terminal devices are allowed to have worldwide access to the Internet by ~~[a]~~ different Internet access networks or, respectively, different Internet operators. ~~[A]~~ This service of the mobile Internet permits a mobile, global utilization of the Internet ~~[becomes possible on the basis of this service of the mobile Internet]~~.

1.

[0004] European patent document EP 0 765 068 A2 discloses a method for payment of an Internet use~~[, whereby]~~ in which the respective Internet can be used given a use of many and different Internet service providers after a request by the Internet and a transmission of the credit card number.

[0005] International patent document WO 97/41586 discloses a method for the connection of a user to the Internet~~[, whereby]~~ in which the user cannot directly access the ~~[internet]~~ Internet but rather access it via a further Internet service provider. To this end, specific logon and check procedures are provided at the further Internet service provider that represent the basis for the usage time and the charge registration.

[0006] International patent document WO 97/14118 discloses a computer network ~~[wherein the]~~ in which geographically distributed computers access the Internet via a central server. The computers can communicate with the server via different communication networks~~[, whereby]~~ that permits a communication ~~[can be implemented]~~ after an authorization procedure and a payment for the use of the server.

SUMMARY OF THE INVENTION

[0007] The object underlying the invention is comprised in fashioning the Internet access networks such that these can be used by arbitrary, mobile communication terminal devices.

[0008] This object is achieved by ~~[the features of patent claim 1.]~~

a method for using various Internet access networks with mobile Internet-compatible communication terminal devices, comprising the steps of providing, in the Internet access networks, at least one respective interface for a cash-free payment for a use of one of the respective Internet access networks which is a respective Internet access network; setting up a traffic relationship to the at least one respective interface in a framework of a logon of a mobile communication terminal device in the respective Internet access network; and using the respective Internet access network one of the mobile communication terminal devices which is a communication terminal device after the cash-free payment via the at least one respective interface that is effected by the communication terminal device.

[0009] The critical aspect of the inventive method is ~~[to be seen therein that]~~ that it provides, in the Internet access networks, at least one interface for cash-free payment for a use of the respective Internet access network ~~[is respectively provided in the Internet access networks. Within]~~. A traffic relationship to the interface is set up within the framework of the log-on of a mobile communication terminal device in the respective Internet access network, ~~[a traffic relationship to the interface is set up]~~ and, following a cash-free payment via the interface effected by the communication terminal device, the respective Internet access network can be used by the mobile communication terminal device.

[0010] The critical advantage of the inventive method is ~~[to be seen therein]~~ that an Internet communication terminal device can both be registered as well as implement a cash-free payment for the Internet access with the assistance of the interface. The registration at an Internet access network with the assistance of a mobile Internet protocol additionally ~~[effects that]~~ permits an Internet user ~~[can]~~ to be reached worldwide. A further advantage is the local realization of the interface in the Internet access network, since the information exchange with respect to the cash-free payment is limited to the Internet access network, i.e., it does not ensue via the Internet itself, and, thus~~[,]~~ avoids a global communication of confidential information or~~[, respectively]~~ data transmitted given cash-free payment ~~[is avoided]~~.

].

[0011] The cash-free payment ensues especially advantageously with the assistance of a credit card{ claim 3 , whereby a}; credit card information and [a] personal identification information are communicated to the interface via the communication terminal device and via the Internet access network. Alternatively, other cards or an input of the credit card information at an input [means] device are also possible, which permits a cash-free payment with the interface of the respective Internet access network {being possible with the assistance thereof, whereby a read means claim 4 is to be}. A reader is adapted to the cards employed. Alternatively, a uniform input [means for example] device (e.g., a numerical or alphanumerical keyboard{}) can be provided for the input of the personal identification and the credit card information.

[0012] According to a further development of the inventive method, an electronic signature is communicated from the affected communication terminal device to the interface in the framework of a security system and/or the identification and credit card information to be communicated is encrypted individually associated to the communication terminal devices{claim 5}.

1:

[0013] Further advantageous developments of the inventive method can be derived from the [further claims].

details presented below.

DESCRIPTION OF THE DRAWING

[0014] The inventive method is explained in greater detail below with reference to a drawing, which is a block diagram illustrating the components and relationships involved in the inventive method.

DETAILED DESCRIPTION OF THE INVENTION

[0015]{

} The drawing shows a block circuit diagram of an arrangement of communication networks for which the inventive method is provided. The global Internet {indicated in the drawing by a dot dash oval reference IN is thereby} IN is connected to Internet servers IN-S{, i.e.} that control the access to the Internet IN {is controlled via these devices}. For example, two Internet servers IN-S are shown{,

whereby]: one Internet server IN-S/F is connected to a communication fixed network KFN[-~~indicated in the drawing by dot dash oval referenced with KFN~~]; and a further Internet server IN-S/M is connected to a communication radio network KMN[-~~indicated by a dot dash oval referenced KMN in the drawing~~]. The communication fixed network KFN is realized, for example, by a service-integrating communication network ISDN or by a telephone communication network FE. Communication fixed network-individual communication terminal devices KE (KFN) are connected to this communication fixed network KFN via subscriber lines ASL.

[0016] The communication radio network KMN can, for example, be realized by an existing mobile radio telephone network GSM or by future mobile radio telephone networks UMTS according to a future UMTS standard for mobile radio telephone networks. Further communication radio networks KMN are fashioned, for example, according to a DECT or CDMA standard or a TD-CDMA standard [-~~indicated by the designation RLL in the block circuit diagram~~] **RLL**. Mobile radio telephone network-individual communication terminal devices KE (KMN) are wirelessly connected to the communication network KMN.

~~[It is assumed for the]~~**[0017]** **The exemplary embodiment assumes** that the communication terminal devices KE (KFN), KE (KMN) connected to the communication fixed network KFN and to the communication radio network KMN are Internet-compatible, i.e., they are equipped with the circuit-oriented and program-oriented [means] **mechanisms** for a communication with the Internet IN. This means that the communication terminal devices KE represent a processor-controlled [means] **device** - particularly a personal computer - that exhibits a picture screen [means] **display** and a keyboard.

[0018] It is also assumed that the communication terminal devices KE (KFN), KE (KMN) represent communication terminal devices KE that can be utilized at different geographical locations. This means that the communication terminal device KE (KFN) - particularly [-]a portable personal computer with an ISDN interface - can be connected to a communication fixed network KFN at different communication terminals KA. ~~[Of course, the]~~ **The** inventive method can also be employed given a fixed connection of a communication terminal device KE (KFN) to a communication network KFN.

[A][0019] The Internet IN must be correspondingly fashioned as a prerequisite for the mobility of the communication terminal devices KE ~~{is-a corresponding fashioning of the Internet IN, i.e.,}~~, i.e., a mobile Internet protocol MIP is implemented in the Internet IN ~~{with whose assistance}~~ that assists the realization of a service for the connection of mobile communication terminal devices KE ~~{is-realized}~~.

1.

[0020] The inventive communication terminal devices KE (KFN) KE (KMN), ~~{further}~~ furthermore, are respectively equipped with an input ~~{means}~~ EE - shown by way of example in the communication terminal device KE for communication radio networks (KMN) - or a reader ~~{means}~~ LE into which a credit card KK can be inserted - indicated by a dot-dash arrow. With the assistance of the input ~~{means}~~ EE, the credit card information ki stored in a credit card KK as well as the identification information id, i.e., the personal identification pin, can be input by an Internet user.

[0021] The communication fixed network KFN and the communication radio network KMN respectively form feeder networks AN for the Internet access network IN-AN or~~{, respectively,}~~ the Internet IN.

[0022] After a wireless or wire-bound connection of a mobile communication terminal device KE (KFN, KMN), a log-on procedure is implemented in the respective communication network KFN, KMN. Such a log-on procedure can, for example, be implemented with the corresponding communication terminal device identification ~~{not shown}~~, whereby (not shown) which uses different identifications ~~{are employed}~~ for the communication fixed network KFN and the communication radio network KMN. Subsequently, a connection from the respective communication terminal device KE (KFN, KMN) is setup to the allocated Internet server IN-S/F, IN-S/M. The setup of the connection and the log-on procedure are implemented in the communication terminal devices with the assistance of a signaling routine SR.

[0023] After the connection setup, the respective communication terminal device KE (KFN, KMN) in the respective Internet server IN-S is connected to ~~{a}~~ an interface SBB for cash-free payment. The interface SBB is realized in software ~~{terms}~~ by an interface routine BB. As a result of a communication relationship between the reader ~~{means}~~ SE or input ~~{means}~~ EE or~~{, respectively,}~~ the signaling

routine SR of the requesting communication terminal devices KE and the commercial interface SBB, identification information id (pin) and credit card information ki are communicated to the interface SBB. After a check of these communicated identification and credit card information id (pin), ki, the access to the Internet IN is enabled in the respective Internet server IN-S, i.e., the requesting communication terminal device KE can set up traffic relationships via the Internet to Internet-specific devices ~~{not shown}~~ (not shown) or to other communication terminal devices KE.

[0024] The cash-free payment for an access to the Internet via the interface SBB can be provided both for a temporary use as well as for a longer or, respectively, continuous use of the access to the Internet IN or, respectively, the respective Internet server IN-S.

[0025] The wire-bound communication terminal devices can be alternatively connected via transmission devices, whereby in which transmission methods are used that do not influence the existing line technologies for, ~~for example~~ e.g., the integrated services communication network ISDN or the analog telephone network FE. Such transmission technologies are the standardized ADSL and x DSL transmission methods. No connections to the respective Internet server need ~~thereby~~ to be setup, since these communication terminal devices are directly connected to the respective Internet server IN-S via the respective connection technology. A log-on or, respectively, registration in the respective Internet server IN-S continues to be required.

[0026] The inventive method is not limited to the exemplary embodiment since the inventive method can also be realized given the greatest variety of public or private feeder networks AN to the respective Internet servers IN-S or, respectively, or, respectively, Internet access networks IN-AN. [A] The invention also considers a respective adaptation in view of the signaling and the protocols employed must thereby be taken into consideration.] used. The above-described method is illustrative of the principles of the present invention. Numerous modifications and adaptations will be readily apparent to those skilled in this art without departing from the spirit and scope of the present invention.